

WHAT IS CLAIMED IS:

1 An address search apparatus in an ethernet switch, said apparatus comprising:

2 a plurality of ports;

3 a plurality of local search blocks corresponding to each of said plurality of ports, said

4 plurality of local search blocks for analyzing a destination address of an input packet received in the

5 port thereof to search for a transmission port of said ethernet switch and provide a source address

6 thereof;

7 a main search unit for analyzing said source address to establish an address data structure of

8 said plurality of local search blocks, and for responding to a destination address request from at least

9 one of said plurality of local search blocks to provide said requested destination address to a

10 corresponding local search block by using said address data structure; and

11 a scheduler for controlling said local search blocks and said main search unit to enable an

12 interface therebetween.

1 2. The address search apparatus according to claim 1, each of said plurality of local search  
2 blocks includes:

3 a destination address table having destination addresses and destination information  
4 corresponding to said destination addresses which are matched therein;

5 a source address table having source addresses and source information corresponding to said  
6 source addresses which are matched therein;

7 an address sorting logic for classifying an ethernet address into groups as many as necessary,  
8 and corresponding to each of said destination address table and said source address table;  
9 a control logic for control of corresponding local search blocks; and  
10 a register unit for temporal storage of data.

1 3.The address search apparatus according to claim 1, said main search unit includes:

2 an address table for storing addresses known to the ethernet switch system and port  
3 information corresponding to said addresses;  
4 a table access logic for accessing said address table;  
5 an address sorting logic for classifying addresses having same characteristics to store data  
6 known to the ethernet switch system into said address table; and  
7 a control unit for control and condition detection of elements.

1 ~~4.~~ An address search method in use for an address search apparatus in an ethernet switch, said  
2 address search method comprising the steps of:

3 providing a plurality of ports, a local search unit corresponding to each of said plurality of  
4 ports for local address search and a main search unit for overall address search of the ethernet switch;  
5 judging whether the corresponding local search unit has a destination port information  
6 corresponding to the destination address by using a destination address of a packet received in one  
7 of the plurality ports; and  
8 requesting for a destination port information corresponding to the destination address to the

9 main search unit when the local search unit does not have the destination port information.

1 5. An address search method in an ethernet switch, said method comprising the steps of:  
2 determining whether or not a port has received an information packet for transmission;  
3 reading a destination address from a header of said information packet;  
4 determining whether said destination address exists in a local search block of said port;  
5 determining whether said destination address is the same as a source address; and  
6 transmitting said information packet to said destination address if said destination address  
7 is in said local search block of said port and is not the same as said source address.

1 6. The method of claim 5, further comprising the step of rejecting said information packet  
2 if said destination address is the same as said source address.

1 7. The method of claim 5, further comprising the steps of:  
2 notifying a main search block if said destination address is not found in said local search  
3 block of said port;  
4 performing an internal search by said main search block to find said destination address;  
5 updating said local search block of said destination address if said main search block  
6 comprises said destination address; and  
7 transmitting said information packet to said destination address.

1 8. The method of claim 7, further comprising the steps of:

2 sending no-port information from said main search block to said port device if said main

3 search block does not comprise said destination address; and

4 broadcasting said information packet to all ports in said ethernet switch by said port device.

1 9. The method of claim 7, further comprising the step of aging, wherein said main search

- 2 block purges addresses that have not recently been used.

1 10. The method of claim 8, further comprising the step of address learning, wherein said

2 main search block adds said destination address to its address table.

1 11. The method of claim 10, further comprising the step of adding said destination address

2 to said local search block.

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